

# STORM WARNINGS

Vol. 1, Issue 2: March 2012  
*Energy and the future of oil*



**R. Michael Conley**  
*Founder*

The *Storm Warnings* newsletter is part of a larger initiative by its founder, R. Michael Conley, to carry the message to others.

"The message is frightfully simple: We are heading into a perfect storm that will forever change our lives, and we need to act on it while there is still time," said Conley.

Under the overall umbrella of his company, Weathering the Storm LLC, its mission to awaken and engage people - providing information and resources to help them weather the storm - is carried out in a number of ways.

King Oil, the elixir that fuels the economic engines of the world could, in its decline, trigger a perfect storm of immense proportions. As the *accessibility* and *affordability* of oil becomes problematic, we have no scalable alternatives to replace it. Sadly, our global addiction to oil has been quieted by misconceptions obfuscating oil's true finite nature. In this interview, owner and publisher, R. Michael Conley, tells why the precarious oil situation could trigger a perfect storm.

Weathering the Storm

**WTS:** Why are you so concerned about the oil situation?

**Conley:** For openers, the specter of \$5.00 per gallon gas is frightening. It's hard to imagine living without an affordable abundance of a resource that has so totally impacted our lives as oil. Its utility, portability and power punch is unequalled. Fueling 95% of America's transportation system, and used to produce everything from paints to plastics to lubricants, it has become an indispensable part of our lives. Indeed, it has fueled and made possible the 'American Dream.'

**WTS:** That's quite an endorsement. What's the oil problem?

**Conley:** The problem isn't oil - it's our addiction to it. As a finite resource, oil will become more difficult and costly to get. With no scalable alternative to replace it, our withdrawal pains could be severe and the world a more dangerous place to live.

**WTS:** Are we running out of oil? Is that what you are saying?

**Conley:** No, at least not geologically, but we are starting to run short of affordable oil. The easy-to-get-at oil is now in decline, and 'newer' oil is more expensive and challenging to find, extract, refine and distribute. It's a global time bomb in the making with chilling implications, but the myths and misconceptions surrounding it have obfuscated the true nature of the threat

**WTS:** Surely, we have the technologies to replace oil, do we not?

**Conley:** Yes and no. Yes, there are technologies available; but no, they are not of sufficient scale to replace oil. Our almost total

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"The *Storm Warnings* newsletter, which provides an in-depth look each month at a specific topic, is one way we hope to awaken and engage people, but we encourage folks to log in to our web-site for a full menu of offerings and services," Conley said.

([www.weatheringthestorm.net](http://www.weatheringthestorm.net))

The website will provide further details on other initiatives. Among them:

1. Lethal Trajectories – Conley's futurist novel on what it will be like to live through a perfect storm crisis
2. *Weathering the Storm Guide* – A guide on how to prepare for the storm
3. Weathering the Storm Seminars – In-depth seminars that are now available
4. Blog, links, other resources, and the Storm Warnings newsletter.

About the Founder: Mike Conley is the Founder of Weathering the Storm LLC, and currently serves as Chairman and CEO of the Conley Family Foundation. As a former Fortune 500 business executive, author, lecturer, and public policy activist, Conley has written

reliance on oil to fuel our transportation system is our Achilles Heel, and replacing it with an alternative fuel and infrastructure could take decades. In the meantime, the economic drag from rising energy prices and/or shortages will constrain future economic growth. We are behind the curve with no sense of urgency, and I'm afraid we'll pay dearly for our lack of foresight.

**WTS:** This is frightening. Can you give us a big picture of the oil situation?

**Conley:** We need to first remember that oil is a global resource traded on global markets, and it is shaped by global supply and demand mechanisms. The nations or cartels controlling production and holding proven reserves will exert a disproportional influence on the geopolitical arena for years to come.

Let's start with a few key numbers: In 2011, the world produced 87.6 MB/D (million barrels of oil per day) and consumed roughly the same amount. There was about 3.5 MB/D of excess capacity in the system and almost all of that was held by Saudi Arabia, the 'gas station' of the world. While domestic oil consumption in the United States leveled out at about 19 MB/D, China and India – with over seven times our population and a new-found appetite for automobiles – triggered an even greater demand. OPEC producers also used more of their own product leaving less available for export. It's easy to see by these trajectories that demand will soon outstrip supply.

**WTS:** Who controls the world's oil?

**Conley:** The world's oil is now concentrated in a handful of national oil companies (NOCs) and most of these are located within the OPEC cartel. Controlling about 80% of the world's proven oil reserves; our future is in their hands. Worse, we're betting the farm they'll ramp up production to meet future global oil demand.

Here's the rub: It's expensive to bring new oil to market. What happens if the NOCs decide it's easier to rely on future price increases to meet their revenue targets than to invest heavily in new oil exploration efforts? Why not instead keep their reserves in the ground for the future when oil prices will be even higher? While good for them, it is not so good for oil importing nations thirsty for oil.

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and spoken frequently on topics related to the perfect storm. He graduated from the University of Minnesota, after serving in the United States Navy, and later completed a post-graduate program at Stanford University. He is also active on several boards and advisory groups.

There's another troubling thing about OPEC: We're not certain they even have the oil reserves they claim to have. OPEC reserves are not open to outside audits – we merely take their word for what they say they have. It gets even murkier when one looks at how past OPEC reserve estimates mysteriously increased almost overnight without mention of any dramatic new mega-field discoveries. In the global oil equation, oil reserves equate to power. The more you have – or say you have – the greater your clout.

**WTS:** What are some of the geopolitical implications?

**Conley:** Bottom line: With only a handful of net oil exporters – most of them in OPEC – controlling the levers of production, and a demand

curve that will soon exceed supply, our future will become increasingly uncertain. As the inverse supply and demand ratio widens, it will translate directly into lost productivity and economic stagnation. Without scalable alternatives to replace oil, economies will flounder. Nations will take draconian measures to protect whatever oil supply they have left, and the world will become a more dangerous place in which to live.

**WTS:** Can you talk more about other factors related to oil production?

**Conley:** There are below and above ground factors that are often referred to as *peak oil* and *peak production* respectively. Let me comment on each: Peak oil is a geologic concept developed by geologist M. King Hubbert to explain how oil production follows a bell-shaped curve. Essentially, oil production within any given field(s) gradually ramps up over time until it reaches a peak production point – usually when about half of the oil is tapped. From that point on, production will plateau and decline until it is no longer economically feasible to produce the oil – even though there is still more oil in the ground. Many nations, including the United States, peaked long ago, and many geologists believe that the global supply of recoverable crude oil has peaked. Crude oil production shortfalls are now being increasingly offset by unconventional oil production – a topic I'll cover later.

*Peak production* combines both geologic and above ground factors and poses, I believe, the greatest threat. Here's why: Most of the 'easy' oil is gone and the newer oil can only be found in more difficult terrain or in geopolitical hot spots. For the most part, new oil will be found and developed from a) harsher regions such as Eastern Siberia and the Arctic, b) deep water, c) unconventional oil sources and d) existing fields using enhanced oil recovery (EOR) technologies such as horizontal drilling and fracking.

All are costly and energy intensive processes. For example, the costs of producing oil from a deep water platform in 10,000 feet of water and still another 10-15,000 feet of bedrock are astronomical. Mining and refining tar sands and other unconventional oils are far costlier in economic and environmental terms than conventional drilling, and EOR methods come with a stiff price in terms

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of the water required and environmental damage. Harsh terrain, rising production costs and volatile geopolitical realities compound the challenge. And so, while we are not running out of oil, the cost and difficulty of getting at new oil could become prohibitive over time.

**WTS:** Can you say more about unconventional oil?

**Conley:** Unconventional oil is really any petroleum produced or extracted using techniques other than conventional oil well drilling. It includes tar sands, oil shale, heavy crudes such as the Orinoco deposits in Venezuela and different coal-based, biomass and liquids produced from natural gas. It is usually less efficient, costlier, and more environmentally unfriendly than conventional oil production, and it has upside production limitations based on these constraints.

**WTS:** What about new conventional crude oil finds?

**Conley:** We are no longer finding the giant land-based mega-fields of yesteryear with a sustainable capacity to pump a million barrels of oil or more daily. As the old giant's peak and decline – as many now have – it will be increasingly difficult to make good their losses from a plethora of new mini-fields, unconventional fields, or existing fields using EOR technologies. Overall production from existing fields is in decline, and we are using up over four barrels of oil for every new barrel we discover. It's like drawing down our oil 'savings' account to support our daily lives without replenishing what we draw out – an unsustainable strategy over time.

**WTS:** Could you comment on what you mean by declining production?

**Conley:** Sure. While the numbers vary, we are seeing a global decline of about 5-6% of "same store" oil from existing fields annually. In round numbers, let's suppose we produce 88 MB/D of global oil and lose 6% of that amount annually from these same fields. That means those same wells will produce about 5 MB/D less oil in the following year. Now, to replace the 5 MB/D that was used up and add still another 1 MB/D to support growing demand, we will need to find an additional 6 MB/D of new oil just to stay even. To put this in perspective, that's like finding new oil sources roughly equivalent to what Iran and Iraq *collectively* produced in 2011.

**WTS:** This is not a pretty global picture. What about the United States?

**Conley:** With less than 4% of the world's population, we are among the largest per capita users of oil and consume about 22% of the world's oil production. In the process, we are transferring vast amounts of our treasury overseas to support our oil addiction. As a national security issue, protecting our access to global oil will almost guarantee the continuous need for an active and robust military presence in the turbulent times ahead.

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**WTS:** Can you comment on the current supply and demand curve in the United States?

**Conley:** Yes. We now consume about 19 MB/D of oil – down from a high of almost 21 MB/D in 2006. The sources of that oil, in rounded off terms, are as follows:

6.0 MB/D	Crude oil produced in USA
9.0 MB/D	Crude oil imported
<u>4.0 MB/D</u>	All other oil*
19.0 MB/D	Total daily consumption

\* Includes refinery gains, liquids from gas, biomass, etc.

Looking at these numbers, you can see that we import about one half of our total daily need, or about 3.5 billion barrels annually. That means that at \$100 per barrel, we export about \$350 billion dollars per year to foreign countries – many of them not our friends.

**WTS:** What about the Bakken oil fields or Rocky Mountain shale? We've heard there are more reserves in these fields than in Saudi Arabia?

**Conley:** I'm glad you asked because it gets at a myth that has lulled us into a false sense of security. The myth is that we can drill our way into energy independence. The geologic fact is that there's no way we'll be able to more than double production to make good the 9 MB/D of oil we currently import and still replenish declining production from existing fields.

Let's start with the Bakken field. Geologically, there are billions of barrels of reserve in that field, but only 5 billion or so barrels of recoverable reserve according to the U.S. Geologic Survey – less than the amount of oil used in one year by the USA. At present, the Bakken produces about ½ MB/D of oil, or roughly 3% of our daily 19 MB/D oil addiction and will eventually ramp up to at least one million barrels per day. That's nothing to sneeze at, but it's still only 5% of our daily requirement – hardly the panacea some claim will make America energy independent. We can also drill offshore, in the ANWR or elsewhere, but we'll forever be dependent on foreign oil unless we change our energy models. That's the long and short of it, and we best get used to the idea.

With respect to the Rocky Mountain shale, most of the 'oil' shale we are referring to isn't crude oil per se but rather a kerogen – a precursor to oil that will eventually turn into a liquid crude oil if left in the ground for several million more years. To commercialize it would require that we replicate nature by heating it up to a point where it liquefies. Oil companies have unsuccessfully tried this for decades, but it still takes far more energy to produce than the energy we would get from it – a negative net energy value.

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**WTS:** What about the economic impact of rising oil prices on America?

**Conley:** Consumer spending accounts for 70% of our GDP. Whenever consumer discretionary dollars are spent at the pump, they are taken out of the economy – with a good portion sent overseas. It's an economic drag that is difficult to overcome. Eight of the nine previous recessions were preceded by oil prices that exceeded 4% of GDP. At \$100 per barrel, we are well into the red zone causing an economic drag that could imperil an economic recovery. This will remain an unfortunate fact of life until we wise up and transform our energy models away from fossil fuels. In the meantime, we'll need to retain a large military presence to protect our oil lifelines.

**WTS:** We've covered a lot of ground. What can you say about renewable energy and energy systems?

**Conley:** This is our way out, and we'll cover it in depth in a future newsletter. I'd wrap this session up by saying that we have a looming oil crisis we can't drill our way out of; there are no scalable alternatives to replace oil, and our best long term hope will be to change our energy models as rapidly as possible while learning to live with less oil. The time is nearing when there will be no other choice. The sooner we wake up to this new paradigm and address it, the better our chances of taking some of the sharper edges off the perfect storm that it will surely produce.